

REMARKS

Claims 1-27 and 29-32 are pending at the time of the Final Office Action. In the Final Office Action transmitted on September 4, 2007, the Examiner took the following action: (1) rejected Claims 1-2 under 35 U.S.C. §103(a) as being unpatentable over Lindgren (U.S. 6,097,835) in view of Fraisse (U.S. 7,171,912); (2) rejected Claim 3 under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Fraisse, and in further view of Lee (U.S. 5,996,681); (3) rejected Claims 4-8 under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Fraisse and Lee, and in further view of Ogawa (U.S. 5,864,632); (4) rejected Claims 9-10 under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7 Science Data User's Handbook solar illumination algorithm ("Landsat-7"); (5) rejected Claim 11 under 35 U.S.C. 103(a) as being anticipated by Lindgren in view of Landsat-7, and in further view of Lee (U.S. 5,995,681); (6) rejected Claims 12-16 under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7 and Lee, and in further view of Ogawa; (7) rejected Claims 17, 20-21 and 23-24 under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Landsat-7, and in further view of Lee; (8) rejected Claims 18-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7 and Lee, and in further view of Ogawa; (9) rejected Claims 25 and 29 under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Lindgren; (10) rejected Claims 26-27 under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Lindgren, and in further view of Ogawa; and (11) rejected Claims 30-32 under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Lee. Applicants amend Claims 1, 9, 17, 23, 25 and 30. Applicants respectfully traverse the rejections, request entry of the above-proposed amendment, as well as reconsideration of the application in view of the foregoing amendment and the following remarks.

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Lindgren (U.S. 6,097,835)

Lindgren teaches a projective panchromatic sharpening method and apparatus that combine registered high spatial resolution panchromatic imagery and lower spatial resolution multispectral imagery to synthesize higher spatial resolution multispectral imagery. (Column 2, Lines 61-64). The projective panchromatic sharpening apparatus comprises a first component that determines the linear radiometric relationship between the panchromatic and multispectral bands, and a second component that processes pixels to produce the sharpened product. (Column 2, Lines 1-8).

Fraisse (U.S. 7,171,912)

Fraisse teaches a map for fertilizer application that is created using a map of site-specific amounts of the soil nutrient needed to produce the maximum possible yield at the particular site. (Column 3, Lines 1-4). Specifically, nutrients currently existing in a field are subtracted from the site-specific amounts of nutrients needed, thus producing a map of site-specific nutrient amounts to be added. (Column 3, Lines 5-15).

I. Rejections under 35 U.S.C. §103(a)

Claims 1-2 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Fraisse. Claim 2 depends from Claim 1. Claim 1, as amended, recites:

1. A method for correlating data from multispectral band images produced by different sensors, the method comprising:
spatially matching a plurality of multispectral band images produced by different sensors, the multispectral band images having different resolution levels, wherein the multispectral band images do not include an panchromatic band image;
performing at least one of a solar illumination correction and an atmospheric correction on the spatially matched images; and
spectrally correcting one or more of the spatially matched images based on one or more of the other images.

Applicants respectfully traverse the rejection. First, Lindgren does not teach or suggest, "spatially matching a *plurality of multispectral band images* produced by different sensors, the multispectral band images having different resolution levels, wherein the multispectral band images *do not include an panchromatic band image.*" (Emphasis added).

Instead, Lindgren discloses matching a "high spatial resolution *panchromatic* imagery" with a "lower spatial resolution *multispectral* imagery" to synthesize a higher resolution multispectral imagery. (Emphasis added). (Column 1, Lines 20-25). In other words, since Lindgren specifically discloses the combination of a *panchromatic* imagery with a *multispectral* imagery, Lindgren does not teach spatially matching a *plurality* of multispectral band images that *do not include an panchromatic band image.*

Second, the deficiencies of the Lindgren are not remedied by Fraisse. Fraisse discloses making atmospheric corrections to satellite images. (Column 7, Lines 4-22). However, Fraisse does not teach or suggest spatially matching a *plurality of multispectral band images* produced by different sensors.

Accordingly, the cited references to Lindgren and Fraisse, whether individually or in combination, do not teach, disclose or fairly suggest the system recited in Claim 1. Furthermore, since Claim 2 depends from Claim 1, it is at least allowable for the same reason that makes Claim 1 allowable over the cited references, as well as for additional limitations recited.

Lee (U.S. 5,995,681)

Lee teaches a digital image processing system that reduces errors in the parameters of a sensor geometry model. (Column 1, Lines 11-15). Lee teaches the use of a co-registration mechanism to co-register the reduced accuracy working digital image with a reference image. (Column 2, Lines 41-44). The imagery co-registration operator adjusts the respective geometry

models associated with the input images to bring the respective images into effective co-registration on image registration surface. (Column 2, Lines 2-59).

Claim 3

Claim 3 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Fraise, and in further view of Lee. Claim 3 depends from Claim 1. Applicants respectfully traverse the rejection, and submit that Claims are allowable over the cited references.

First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 1 under 35 U.S.C. §103(a), and assert that the cited references to Lindgren and Fraise, whether individually or in combination, do not teach, disclose or fairly suggest, "spatially matching *a plurality of multispectral band images* produced by different sensors, the multispectral band images having different resolution levels, wherein the multispectral band images *do not include an panchromatic band image*," as recited in Claim 1. (Emphasis added).

Second, Applicants respectfully submit that the deficiencies of Lindgren are also not remedied by Lee. As noted by the Examiner, Lee disclose setting a plurality of control points in the images based on landmark information and aligning images based on the set control points. (Figure 1). However, Lee also does not disclose, teach or fairly suggest spatially matching *a plurality of multispectral band images* produced by different sensors, as is presently claimed. (Emphasis added).

Accordingly, the cited references (Lindgren, Fraise, and Lee), whether individually or in combination, do not teach, disclose or fairly suggest the system recited in Claim 1. Furthermore, since Claim 3 depends from Claim 1, it is at least allowable for the same reason that makes Claim 1 allowable over the cited references, as well as for additional limitations recited.

Ogawa (U.S. 5,864,632)

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Ogawa teaches a map editing device that is capable of supplementing insufficient information and re-measuring an object that has changed. (Column 1, Lines 64-66). The map editing device generates and displays a perspective projection map when a user manually changes the projection center and the projection angle. (Column 2, Lines 33-39). The map editing is also capable of supplementing insufficient information based on the projection center and the projection angle. (Column 2, Lines 39-50).

Claim 4-8

Claims 4-8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Fraisse and Lee, and in further view of Ogawa. Claims 4-8 depend from Claim 1. Applicants respectfully traverse the rejection.

First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 3 under 35 U.S.C. §103(a), and assert that the cited references to Lindgren, Fraisse, and Lee, whether individually or in combination, do not teach, disclose or fairly suggest, “spatially matching *a plurality of multispectral band images* produced by different sensors, the multispectral band images having different resolution levels, wherein the multispectral band images *do not include an panchromatic band image*,” as recited in Claim 1. (Emphasis added).

Moreover, the deficiencies of Lindgren are not remedied by Ogawa. Ogawa teaches a means for extracting ground control points from tracing the images of objects such as roads, buildings, fields, and woods. (Column 6, Lines 30-38). However, Ogawa does not teach spatially matching *a plurality of multispectral band images*. (Emphasis added). Accordingly, the cited references (Lindgren, Fraisse, Lee, and Ogawa), whether individually or in combination, do not teach, disclose, or fairly suggest the system recited in Claim 1.

Furthermore, since Claims 4-8 depend from Claim 1, they are at least allowable for the same reason that makes Claim 1 allowable over the cited references, as well as for additional limitations recited.

Claims 9-10

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7. Claim 10 depends from Claim 9. Claim 9, as amended, recites:

9. A system for correlating data from two or more satellite images from different sensors, the system comprising:

means for spatially matching a plurality of multispectral band satellite images produced by different sensors, the multispectral band satellite images having different resolution levels, wherein the multispectral band satellite images do not include an panchromatic band image;

means for performing a solar illumination correction on the spatially matched satellite images; and

means for spectrally correcting one or more of the spatially matched satellite images based on one or more of the other satellite images.

Applicants respectfully traverse the rejection. First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 1 under 35 U.S.C. §103(a). Accordingly, Applicants assert that the cited reference to Lindgren does not teach or suggest, “means for spatially matching a plurality of multispectral band satellite images produced by different sensors, the *multispectral band satellite images* having different resolution levels, wherein the multispectral band satellite images *do not include an panchromatic band image*,” as recited in Claim 9. (Emphasis added).

Second, the deficiencies of Lindgren are not remedied by Landsat-7. Landsat-7 discloses solar illumination corrections. However, Landsat-7 does not teach spatially a means for matching *a plurality of multispectral band images*. (Emphasis added). Accordingly, the cited references to Lindgren and Landsat-7 whether individually or in combination, do not teach, disclose or fairly

suggest the system recited in Claim 9. Furthermore, since Claim 10 depends from Claim 9, it is at least allowable for the same reason that makes Claim 10 allowable over the cited references, as well as for additional limitations recited.

Claim 11

Claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Landsat-7, and in further view of Lee. Claim 11 depends from Claim 9. Applicants respectfully traverse the rejection.

First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 9 under 35 U.S.C. §103(a). Accordingly, Applicants assert that the cited references to Lindgren and Landsat-7, whether individually or in combination, do not teach, disclose or fairly suggest, "means for spatially matching a plurality of multispectral band satellite images produced by different sensors, the *multispectral band satellite images* having different resolution levels, wherein the multispectral band satellite images *do not include an panchromatic band image*," as recited in Claim 9. (Emphasis added).

Moreover, the deficiencies of Lindgren are not remedied by Lee. Lee discloses a display device 25 that displays satellite images. (Column 1, Lines 52-56). However, Lee does not teach or suggest a "means for performing a *solar illumination correction* on the spatially matched satellite images." (Emphasis added).

Accordingly, the cited references (Lindgren, Landsat-7, and Lee), whether individually or in combination, do not teach, disclose or fairly suggest the system recited in Claim 9. Furthermore, since Claim 11 depends from Claim 9, it is at least allowable for the same reason that makes Claim 9 allowable over the cited references, as well as for additional limitations recited.

Claims 12-16

Claims 12-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Landsat-7 and Lee, and in further view of Ogawa. Claims 12-16 depend from Claim 9. Applicants respectfully traverse the rejection.

First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 11 under 35 U.S.C. §103(a). Accordingly, Applicants assert that the cited references to Lindgren, Landsat-7, and Lee, whether individually or in combination, do not teach or suggest, “means for spatially matching a plurality of multispectral band satellite images produced by different sensors, the *multispectral band satellite images* having different resolution levels, wherein the multispectral band satellite images *do not include an panchromatic band image*,” as recited in Claim 9. (Emphasis added).

Moreover, the deficiencies of Lindgren with respect to this limitation are not remedied by Ogawa. Ogawa teaches a means for extracting ground control points from tracing the images of objects such as roads, buildings, fields, and woods. (Column 6, Lines 30-38). However, Ogawa does not teach spatially a means for matching *a plurality of multispectral band images*. (Emphasis added).

Accordingly, the cited references (Lindgren, Landsat-7, Lee, and Ogawa), whether individually or in combination, do not teach, disclose, or fairly suggest the system recited in Claim 9. Furthermore, since Claims 12-16 depend from Claim 9, they are at least allowable for the same reason that makes Claim 9 allowable over the cited references, as well as for additional limitations recited.

Claim 17, 20-21, and 23-24

Claims 17, 20-21, and 23-24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Landsat-7, and in further view of Lee. Claims 20-21 and 23-24 depend from Claim 17. Claim 17, as amended, recites:

17. A system for correlating a plurality of satellite images from different sources, the system comprising:
- a user interface device;
 - a display device;
 - a database for storing landmark information; and
 - a processor coupled to the user interface device, the display device, and the database, the processor including:
 - means for instructing the display device to present one of the satellite images based on the stored landmark information, the satellite images include multispectral band images of different resolution levels, wherein the multispectral band images do not include an panchromatic band image;
 - means for setting control points in the satellite images based on a signal generated by the user interface;
 - means for aligning the images based on the set control points;
 - means for performing a solar illumination correction on the aligned images; and
 - means for spectrally correcting one or more of the aligned images based on one or more of the other images.

Applicants respectfully traverse the rejection. Specifically, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 11 under 35 U.S.C. §103(a). Accordingly, Applicants assert that the cited references to Lindgren, Landsat-7, and Lee, whether individually or in combination, do not teach, disclose or fairly suggest, “means for instructing the display device to present one of the satellite images based on the stored landmark information, the satellite images *include multispectral band images* of different resolution levels, wherein the multispectral band images *do not include an panchromatic band image*,” as recited in Claim 17. (Emphasis added).

Furthermore, since Claims 20-21 and 23-24 depend from Claim 17, they are at least allowable for the same reason that makes Claim 17 allowable over the cited references, as well as for additional limitations recited.

Claims 18-19 and 22

Claims 18-19 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Landsat-7 and Lee, and in further view of Ogawa. Claims 18-19 and 22 depend from Claim 17. Applicants respectfully traverse the rejection.

First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 11 under 35 U.S.C. §103(a). Accordingly, Applicants assert that the cited references to Lindgren, Landsat-7, and Lee, whether individually or in combination, do not teach, disclose or fairly suggest, "means for instructing the display device to present one of the satellite images based on the stored landmark information, the satellite images *include multispectral band images* of different resolution levels, wherein the multispectral band images *do not include an panchromatic band image*," as recited in Claim 17. (Emphasis added).

Further, the deficiencies of Lindgren with respect to this limitation are not remedied by Ogawa. As noted above, Ogawa teaches a means for extracting ground control points from tracing the images of objects such as roads, buildings, fields, and woods. (Column 6, Lines 30-38). However, Ogawa does not teach or suggest multispectral band satellite images that do not include an panchromatic band image.

Accordingly, the cited references (Lindgren, Landsat-7, Lee, and Ogawa), whether individually or in combination, do not teach, disclose, or fairly suggest the system recited in Claim 17. Furthermore, since Claims 18-19 and 22 depend from Claim 17, they are at least allowable for the same reason that makes Claim 17 allowable over the cited references, as well as for additional limitations recited.

Claims 25 and 29

Claims 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Lindgren. Claim 29 depends from Claim 25. Claim 25, as amended, recites:

25. A user interface for selecting control points on a plurality of multispectral band satellite images from different sources for alignment, the user interface comprising:

- a first component for displaying one of the multispectral band satellite images, the multispectral band satellite images include images from a group consisting of at least one of one or more visible light images, one or more infrared images, and one or more thermal infrared images, wherein the images have different resolution levels;
- a second component for selecting a landmark from a database of landmarks located within a geographic area common to the plurality of multispectral band satellite images;
- a third component for adjusting the displayed multispectral band satellite image to present the selected landmark; and
- a fourth component for selecting a control point associated with a visual feature that is approximately adjacent to the selected landmark.

Applicants respectfully traverse the rejection. First, Lee does not teach or suggest, "a first component for displaying one of the multispectral band satellite images, the multispectral band satellite images include images from a group *consisting of at least one of one or more visible light images, one or more infrared images, and one or more thermal infrared images*, wherein the images have different resolution levels," as recited in Claim 25. (Emphasis added). Instead, Lee discloses a display device 25 that displays satellite images. (Column 1, Lines 52-56). However, Lee is silent on the type of satellite image displayed. Specifically, Lee does not teach or suggest the display of multispectral band satellite images that are set to equalized resolution levels, as is presently claimed.

Second, Applicants respectfully submit that the deficiencies of Lee are not remedied by Lindgren. Instead, Lindgren discloses matching a “high spatial resolution *panchromatic* imagery” with a “lower spatial resolution *multispectral* imagery” to synthesize a higher resolution multispectral imagery. (Emphasis added). (Column 1, Lines 20-25). However, since Lindgren specifically discloses the combination of a *panchromatic* imagery with a *multispectral* imagery, Lindgren does not teach “multispectral band satellite images include images from a group *consisting* of at least one of *one or more visible light images, one or more infrared images, and one or more thermal infrared images*,” as recited in Claim 25. (Emphasis added).

Furthermore, since Claim 29 depends from Claim 25, it is at least allowable for the same reason that makes Claim 25 allowable over the cited references, as well as for additional limitations recited.

Claims 26-27

Claims 26-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee in view of Lindgren, and in further view of Ogawa. Claims 26-27 depend from Claim 25.

Applicants respectfully traverse the rejection. First, Applicants respectfully incorporate the reasoning presented above in response to the rejection of Claim 25 under 35 U.S.C. §103(a). Accordingly, Applicants assert that Lee does not teach or suggest, “a first component for displaying one of the multispectral band satellite images, the multispectral band satellite images include images from a group *consisting* of at least one of *one or more visible light images, one or more infrared images, and one or more thermal infrared images*, wherein the images have different resolution levels,” as recited in Claim 25. (Emphasis added).

Second, Applicants respectfully submit that the deficiencies of Lee are not remedied by Ogawa. Ogawa discloses analyzing visual features such as fields and buildings by edge detection and tracing. (Column 6, Lines 30-38). However, Ogawa does not teach or suggest analyzing

multispectral band satellite images, as recited in Claim 25. (Emphasis added). Accordingly, the cited references to (Lee, Lindgren, and Ogawa) whether individually or in combination, do not teach, disclose or fairly suggest the user interface recited in Claim 25. Furthermore, since Claims 26-27 depend from Claim 25, they are at least allowable for the same reason that makes Claim 25 allowable over the cited references, as well as for additional limitations recited.

Claims 30-32

Claims 30-32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lindgren in view of Lee. Claims 31-32 depend from Claim 30. Claim 30, as amended, recites:

30. A method for correlating data from multispectral band images produced by different sensors, the method comprising:
spatially matching a plurality of multispectral band images produced by different sensors, wherein the multispectral band images do not include an panchromatic band image;
setting a plurality of control points in the images based on landmark information; and
spectrally correcting one or more of the spatially matched images based on spectral information associated with one or more of the set control points in the images.

Applicants respectfully traverse the rejection. First, Lindgren does not teach or suggest, “spatially matching a plurality of multispectral band images produced by different sensors, the multispectral band images having different resolution levels, wherein the multispectral band images do not include an panchromatic band image.” (Emphasis added).

Instead, Lindgren discloses matching a “high spatial resolution *panchromatic* imagery” with a “lower spatial resolution *multispectral* imagery” to synthesize a higher resolution multispectral imagery. (Emphasis added). (Column 1, Lines 20-25). In other words, since Lindgren specifically discloses the combination of a *panchromatic* imagery with a *multispectral*

imagery, Lindgren does not teach spatially matching a *plurality* of multispectral band images that *do not include an panchromatic band image*, as is presently claimed.

Second, Applicants respectfully submit that the deficiencies of Lindgren are also not remedied by Lee. As noted by the Examiner, Lee disclose setting a plurality of control points in the images based on landmark information and aligning images based on the set control points. (Figure 1). However, Lee also does not disclose, teach or fairly suggest spatially matching *a plurality of multispectral band images* produced by different sensors. (Emphasis added).

Accordingly, the cited references (Lindgren and Lee), whether individually or in combination, do not teach, disclose or fairly suggest the system recited in Claim 30. Furthermore, since Claim 31-32 depend from Claim 30, they are at least allowable for the same reason that makes Claim 30 allowable over the cited references, as well as for additional limitations recited.

CONCLUSION

Applicants respectfully request that the above-proposed amendments be entered and that pending Claims 1-27 and 29-32 be allowed. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Respectfully Submitted,

Dated: 1-25-08

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